WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2005TX201B

Title: Evaluation of Spatial Heterogeneity of Watershed through HRU Concept Using SWAT

Project Type: Research

Focus Categories: Models, Hydrology, Water Quality

Keywords: hydrological model, heterogeneity, Hydrologic Response Unit (HRU)

Start Date: 03/01/2005

End Date: 02/28/2006

Federal Funds: $5,000

Non-Federal Matching Funds: $26,522

Congressional District: 17th

Principal Investigators:
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Abstract

The thrust of this project is to develop advanced distributed parameter models that use spatially variable input data more accurately model complex water quality issues. The study will identify if the use aggregated spatial parameters (i.e., precipitation, slopes, soils, geology, land use, evapotranspiration, etc.) can be developed for hydrologic response units or HRUs. Data at the HRU scale will be used to evaluate whether these advanced models can improve the performance of the Soil Water Assessment Tool (the SWAT model). SWAT is widely used to model how human activities affect water quality and nonpoint source pollution. The project will also modify the way in which the SWAT model delineates HRS by more fully taking into account spatially variable factors such as weather conditions, slopes, and soils. To modify SWAT in this way, the geographic information system (GIS) interface of SWAT will have to be modified and the FORTRAN code for SWAT will have to be substantially altered. The project should result in a more robust version of the SWAT model that better defines HRUs and better accounts for spatial variations in watersheds.